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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/655,809	09/05/2003	Todd M. Stanchfield	88507.0001	7110

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EXAMINER	
LIU, LI	

ART UNIT	PAPER NUMBER
2613	

DATE MAILED: 09/20/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/655,809	STANCHFIELD ET AL.	
	Examiner	Art Unit	
	Li Liu	2631	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *05 September 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-29* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-19 and 21-29* is/are rejected.

7)☒ Claim(s) *20* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *11 September 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-9, 13, 15, 17-19, 21-25, 28 and 29 are rejected under 35 U.S.C. 102(b) as being anticipated by Doyle (US 5,602,664).

1) With regard to claim 1, Doyle discloses a repeater unit (Figure 1 and Figure 3), comprising:

at least one receiver module (25 in Figure 1, column 3 line 34-36) responsive to an infrared signal; and

a controller unit (the combination of IR Receiver Section 20 and signal gate 30 and frequency oscillator 40 in Figure 1, or the combination of 202, 30 and 40 in Figure 3; based on the duty cycle or pulse width, the IR Receiver Section 20 is able to distinguish the remote control signal and CFLs noise, column 5 line 14-31) adapted to determine whether a signal based on the infrared signal corresponds to a remote control signal.

2) With regard to claim 2, Doyle discloses wherein the infrared signal comprises at least one of a noise input (CFLs, ABSTRACT and column 5 line 14-18) and the remote control signal (the input from remote control unit 10 in Figure 1, column 3 line 58-65).

3) With regard to claim 3, Doyle discloses wherein the controller unit (IR Receiver Section 20 in Figure 1) is adapted to distinguish between the noise input (CFLs noise, column 5, line 14-31) and the remote control signal (the input from remote control unit 10 in Figure 1, column 5 line 14-31).

4) With regard to claim 4, Doyle discloses wherein the controller unit (IR Receiver Section 20 in Figure 1) generates an output signal (column 3 line 38-46that corresponds to the remote control signal if the controller unit determines that the signal based on the infrared signal corresponds to the remote control signal (column 3 line 65 to column 4 line 6, and column 5 line 27-31, and column 5 line 56 to column 6 line 32).

5) With regard to claim 5, Doyle discloses wherein the at least one receiver module comprises a first receiver module (204 in Figure 4), tuned to a first carrier frequency (center frequency of 38 kHz, column 7 line 41-43), that receives the infrared signal and is configured to generate a first signal based on the infrared signal (claim 18, column 9 line 10-12), and further comprising:

a second receiver module (206 in Figure 4), tuned to a second carrier frequency (center frequency of 56 kHz, column 7 line 45-46), that receives the infrared signal and is configured to generate a second signal based on the infrared input signal (claim 18, column 9 line 18-20).

6) With regard to claim 6, Doyle discloses wherein the infrared signal comprises at least one of a noise input (CFLs noise, column 5, line 14-31) and the remote control signal (the input from remote control unit, Figure 4, and claim 8, column 8 line 32-34).

7) With regard to claim 7, Doyle discloses wherein the controller unit is adapted to distinguish between the noise input and the remote control signal (claim 8, column 8 line 32-34, the repeater is resistant to interference generated by CFLs).

8) With regard to claim 8, Doyle discloses wherein the controller unit generates an output signal that corresponds to the remote control signal (column 3 line 38-46, and claim 18, column 9 line 10-12 and line 18-20) if the controller unit determines that at least a portion of the first signal or the second signal corresponds to the remote control signal (column 5 line 14-31).

9) With regard to claim 9, Doyle discloses wherein the controller unit determines that the signal based on the infrared signal corresponds to the remote control signal by measuring a pulse width of the signal based on the infrared signal (the duty cycle or pulse width of the infrared signal is evaluated and compared with those of the pulses illustrated in Figure 2b, so to distinguish remote control signal and noise, column 5 line 14-31), and

determining if the pulse width of the signal based on the infrared signal is greater or less than a predetermined duration that corresponds to a duration of a pulse width of a carrier of one of the remote control signals (Figure 2b, illustrates that each pulse has a predetermined pulse width; and the duty cycle or pulse width of the infrared signal is evaluated and compared with those of the pulses having a predetermined pulse width illustrated in Figure 2b, so to distinguish remote control signal and noise, column 5 line 14-31) .

10) With regard to claim 13, Doyle discloses wherein the at least one receiver module comprises a wideband receiver module adapted to generate the signal based on the infrared signal (the receiver section is tuned to respond to a modulating signal center frequency about in the middle of the range of frequencies used by the respective manufacturers, column 2 line 66 to column 3 line 4; that is, the receiver section has a relatively wideband frequency response characteristic).

11) With regard to claim 15, Doyle discloses wherein the first and second receiver modules comprise wideband receiver modules (the receiver section is tuned to respond to a modulating signal center frequency about in the middle of the range of frequencies used by the respective manufacturers, column 2 line 66 to column 3 line 4) configured to generate signals based on the infrared signal (claim 5 and claim 18, column 9 line 10-12 and line 16-18).

12) With regard to claim 17, Doyle discloses wherein the controller unit (the combination of IR Receiver Section 20 and signal gate 30 and frequency oscillator 40 in Figure 1, or the combination of 202, 30 and 40 in Figure 3):

determines if the first signal based on the infrared signal is a valid remote control signal by determining if the first signal corresponds to one of the remote control signals (claim 8, and column 5 line 14-31), or

determines if the second signal based on the infrared signal is a valid remote control signal by determining if the second signal corresponds to one of the remote control signals (claim 8, and column 5 line 14-31); and

generates a signal that corresponds to one of the remote control signals (claim 18, and column 3 line 65 to column 4 line 6, and column 5 line 27-31, and column 5 line 56 to column 6 line 32), if the controller unit determines that either the first signal or the second signal is a valid remote control signal, by adding a fixed carrier frequency (e.g. 47 KHz column 7 line 19-30, and claim 18), to either the first signal or the second signal (column 7 line 11-30).

13) With regard to claim 18, Doyle discloses wherein the controller unit determines if the first signal corresponds to one of the remote control signals by measuring a pulse width of the first signal (claim 8, the two IR detectors are resistant to interference generated by CFLs, and column 5 line 14-31), and determining if the pulse width of the first signal is greater or less than a predetermined duration that corresponds to a duration of a carrier of one of the remote control signals (Figure 2b, column 5, line 14-31).

14) With regard to claim 19, Doyle discloses wherein the controller determines that the second signal corresponds to one of the remote control signals by measuring a pulse width of the second signal (claim 8, the two IR detectors are resistant to interference generated by CFLs, and column 5 line 14-30), and determining if the pulse width of the second signal is greater or less than a predetermined duration that corresponds to a duration of a carrier of one of the remote control signals (Figure 2b column 5, line 14-31).

15) With regard to claim 21, Doyle discloses the repeater further comprising: an amplifier (Figure 3, and claim 17, an amplifier coupled to the oscillator) that amplifies the output signal generated by the controller unit.

16) With regard to claim 22, Doyle discloses wherein the infrared signal is from a control device (remote control unit 10 in Figure 1).

17) With regard to claim 23, Doyle discloses wherein the control device is a remote control device (remote control unit 10 in Figure 1).

18) With regard to claim 24, Doyle discloses wherein the first carrier frequency is centered about 38 kHz (column 7 line 41-43).

19) With regard to claim 25, Doyle discloses wherein the second carrier frequency is centered about 56 kHz (column 7 line 45-47).

20) With regard to claim 28, Doyle discloses an infrared repeater unit comprising a controller unit (the combination of IR Receiver Section 20 and signal gate 30 and frequency oscillator 40 in Figure 1, or the combination of 202, 30 and 40 in Figure 3).

21) With regard to claim 29, Doyle discloses an infrared repeater system (Figure 1), comprising:

a remote control device (remote control unit 10 in Figure 1) that generates a remote control signal;

a repeater unit (Figure 3), comprising:

at least one receiver module (204 and 206 in Figure 4) responsive to an infrared signal, wherein the infrared signal comprises at least one of a noise input (CLFs,

column 5, line 14-18) and the remote control signal (the input from remote control unit 10 in Figure 1),

a controller unit (the combination of IR Receiver Section 20 and signal gate 30 and frequency oscillator 40 in Figure 1, or Figure 3) adapted to determine whether a signal based on the infrared signal corresponds to the remote control signal (based on the duty cycle or pulse width, the IR Receiver Section 20 is able to distinguish the remote control signal and CFLs noise, column 5 line 14-31), wherein the controller unit generates an output signal that corresponds to the remote control signal if the controller unit determines that the signal based on the infrared signal corresponds to the remote control signal (column 7 line 11-33, and claim 18), and

an amplifier (Figure 3, and claim 17, an amplifier coupled to the oscillator) that amplifies the output signal generated by the controller unit; and

at least one component (the IR Led 55 in Figure 3, column 7 line 24-30) responsive to the amplified output signal from the amplifier.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 10-12, 14 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Doyle (US 5,602,664) in view of Koinuma et al (US 5,301,355).

1) With regard to claim 10, Doyle discloses all of the subject matter as applied in claims 1 and 5-8 above. Doyle further discloses the fixed center frequency ~47 KHz of the output signal. But Doyle does not disclose wherein the output signal generated by the controller unit comprises at least one of a remote control signal having the first carrier frequency and a remote control signal having the second carrier frequency.

However, Koinuma et al, in the same field of endeavor, discloses an IR repeater whose modulated output signal is related to the frequency of the carrier of the modulated input signal (column 1 line 55-68).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to apply the altered carrier frequency taught by Koinuma et al to the system of Doyle so that the output signal comprises the remote control signal having the first or second carrier frequency, and then for better control other consumer electronic equipments.

2) With regard to claim 11, Doyle discloses all of the subject matter as applied in claims 1, 5-8 and 10 above. Doyle further discloses wherein the output signal is based on the remote control signal having the first carrier frequency and the remote control signal having the second carrier frequency (Figure 3 and 4, the Gate 30 responds to both the first input 204 and second input 206, and claim 5 and 18).

3) With regard to claim 12, Doyle discloses all of the subject matter as applied in claims 1, 5-8, 10 and 11 above. And Doyle further disclose wherein the output signal comprises the result of a logical OR operation performed on the remote control signal having the first carrier frequency and the remote control signal having the second carrier

frequency (the applicant states that through "logical OR" operation, the controller unit 90 simultaneously generates an output signal that logically combines both carrier outputs so that the output signal can control different components controlled by both carrier frequencies [0065]; in Doyle's system, Figure 3 and 4, the Gate 30 responds to both the first input 204 and second input 206, so is the "logical OR", and the modulating signal produced by the oscillator is also about in the middle of a wideband frequencies that covering the first and second frequencies, column 3 line 2-9).

4) With regard to claim 14, Doyle discloses all of the subject matter as applied in claim 1 above. But Doyle does not disclose wherein the at least one receiver module comprises a narrowband receiver module configured to generate a signal that corresponds to a portion of the infrared signal.

However, Koinuma et al, in the same field of endeavor, discloses IR repeater with a narrowband signal receiver for noise suppression (Figure 1 and 2, column 2 line 66 to column 3 line 4). Koinuma et al's system is noise resistant (column 3 line 65 to column 4 line 7).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to apply narrowband receiver taught by Koinuma et al to the system of Doyle so that the external noise from fluorescent lamps can be prevented, and the signal to noise ratio can be increased.

5) With regard to claim 16, Doyle discloses all of the subject matter as applied in claims 1 and 5 above. But Doyle does not disclose wherein the first and second receiver

modules comprise narrowband receiver modules that are configured to generate a first signal and a second signal that correspond to a portion of the infrared signal.

However, Koinuma et al, in the same field of endeavor, discloses IR repeater with a narrowband signal receiver for noise suppression (Figure 1 and 2, column 2 line 66 to column 3 line 4). Koinuma et al's system is noise resistant (column 3 line 65 to column 4 line 7).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to apply narrowband receiver taught by Koinuma et al to the system of Doyle so that the external noise from fluorescent lamps can be prevented, and the signal to noise ratio can be increased.

5. Claims 26 and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Doyle (US 5,602,664).

Doyle discloses all of the subject matter as applied in claims 1 and 5 above. But Doyle does not disclose that the repeater further comprises a third receiver module, tuned to a third carrier frequency centered about 455 kHz, that receives the infrared signal and is configured to generate a third signal based on the infrared input signal.

Although Doyle doesn't specifically disclose the third receiver module tuned to a third carrier frequency 455 KHz, such limitation is merely a matter of design choice and would have been obvious in the system of Doyle. Doyle teaches that the repeater may use one receiver for 38 KHz and then another for 58 KHz. The limitations in claims 26 and 27 do not define a patentably distinct invention over that in Doyle's system since both the invention as a whole and Doyle's system are directed to a multi-receiver

system. Adding one more receiver as a whole presents no new or unexpected results. Therefore, to add third receiver with a center frequency of 455 KHz would have been a matter of obvious design choice to one of ordinary skill in the art.

Allowable Subject Matter

6. Claim 20 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

7. The following is a statement of reasons for the indication of allowable subject matter: the present invention comprises multiple receiver modules, controller unit, amplifier and emitter. The closest prior art, Doyle (US 5,602,664), shows a similar system, and two receiver modules are used. However, the prior art fails to discloses that even though the pulse width of the first output signal or the second signal is less than the predetermined duration, the controller unit still can determine that either the first signal or the second signal corresponds to one of the remote control signals if the first signal and the second signal are simultaneously active.

Conclusion

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Pugel (US 6,895,252) discloses an IR extension system.

Thomas (US 6,400,480) discloses a battery module transceiver for extending the range of infrared remote controller.

Dockery (US 4,809,359) discloses a system for extending the IR remote control.

Martnelli et al (US 5,982,519) discloses an infrared communications scheme.

Teich et al (US 4,850,040) discloses an IR remote control system.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Li Liu whose telephone number is (571)270-1084. The examiner can normally be reached on Mon-Fri, 7:30 am - 5:00 pm, alternating Fri off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Shuwang Liu can be reached on (571)272-3036. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Li Liu
September 12, 2006

SHUWANG LIU
SUPERVISORY PATENT EXAMINER